

Solving Logarithmic Equations  
Module 2, Unit 4, Lesson 6

Solve the logarithmic equation. Leave answers in exact form. Check for extraneous solutions.

1.  $\log_4 x + \log_4(x - 30) = 3$

2.  $\log(x + 7) + \log x = \log 18$

3.  $5 - \ln(x - 1) = 2$

4.  $3\log_5 x - \log_5 9 = \log_5 3$

5.  $4 = \log_3 x + \log_3(x - 24)$

6.  $\ln 3 = \ln(2x + 5) - \ln x$

7.  $\log_4(2x + 1) + \log_4 x = \log_4 3$

8.  $\log_2 x + \log_2(x - 6) = 4$

$$9. \ln 7 = \ln(5x - 4) + \ln 3$$

$$10. \log_7 x - \log(x - 6) = \log 14$$

$$11. \ln(x - 4) + \ln(x + 1) = \ln(x - 8)$$

$$12. 8 = 4 + 2\log_4(x + 5)$$

$$13. \log x + \log(x - 3) = 1$$

$$14. \log_6(x + 3) - \log_6(x - 1) = 2$$

$$15. \log_5 x - \log_5 9 = \log_5(x + 2)$$

$$16. 4 + \ln(x - 2) = 8$$

## Answers

1. 32
2. 2
3.  $e^3 + 1$
4. 3
5. 27
6. 5
7. 1
8. 8
9.  $\frac{19}{15}$
10. 12
11. No solution
  
12. 11
13. 5
14.  $\frac{39}{35}$
15. No solution
16.  $e^4 + 2$